

REMARKS

Claims 1, 2-4, 18, 20-23, 25-28, 30-33, 35-38, 40-53, 46-49 and 56-63 are pending in this application. By this Amendment, 1, 5, 6, 12, 20, 25, 30, 35, 40, 46 and 56 are amended. Reconsideration based on the following remarks is respectfully requested.

I. The Claims Satisfy the Requirements Under 35 U.S.C. §112, Second Paragraph

The Office Action rejects claims 1, 2, 4-18, 20, 23, 25-28, 30-33, 35-38, 40-43, 46-49 and 56-63 under 35 U.S.C. §112, second paragraph as being indefinite. In response, claims 1, 5, 6, 12, 20, 25, 30, 35, 40, 46 and 56 are amended to at least overcome the rejection under 35 U.S.C. §112, second paragraph. Withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

II. The Claims Define Patentable Subject Matter

The Office Action rejects claims 1, 2, 4-18, 21-23, 25-28, 30-33, 40-43, 62 and 63 under 35 U.S.C. §103(a) over U.S. Patent No. 5,329,207 to Cathey et al. and U.S. Patent No. 5,200,630 to Nakamura et al.; claims 40-43, 46-49 and 56-61 under 35 U.S.C. §103(a) over Cathey et al., Nakamura et al. and further in view of JP 58-90722 to Sato. These rejections are respectfully traversed.

Cathey et al. and Nakamura et al. do not teach, disclose or suggest, individually or in combination, "crystallizing at least a surface layer of the thin film by applying energy through a window that exhibits transparency to the energy to the surface of the thin film, wherein a distance between the window and the thin film is more than about 20 mm, and at least the surface layer of the thin film is melted by the applied energy and crystallized by cooling solidification, the thin film being melted under a mixed gaseous atmosphere having a total pressure of at least atmospheric pressure ..., wherein unpaired bonding electrons on the surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the mixed gaseous atmosphere, the mixed gaseous atmosphere containing a hydrogen-

containing gas and an inert gas," as recited in claim 1, and as similarly recited in claims 12, 20, 25, 30, 35, 40, 46 and 56.

The Office Action, at page 4, admits "Cathey does not specifically mention to reduce the scatter of melted thin film and to make the distance sufficient for the reduced scatter wherein unpaired bonding electrons on the surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere of inert gas."

However, the Office Action, at pages 4-5 asserts "However, Nakamura in Table 2 and col. 5, lines 1-35 describes to reduce the scatter of melted thin film and to make the distance sufficient for the reduced scatter wherein unpaired bonding electrons on the surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere of inert gas (i.e. the dangling bonds being compensated for by hydrogen) to improve the mobility of carriers." This assertion is traversed.

Nakamura et al. instead discloses "vacuum is drawn in the chamber 51. Subsequently, hydrogen gas is introduced into the chamber 51 from the inlet 60. Thereafter, hydrogen plasma is generated between the electrodes 55 and 56" (col. lines 55-60).

Nakamura et al. does not teach a mixed gaseous atmosphere of at least atmospheric pressure and containing a hydrogen-containing gas and an inert gas. Furthermore, Nakamura et al. discloses "laser beams having a wavelength of 308 nm are irradiated onto the amorphous silicon 53 through the window 52 by the XeCl excimer laser 59 such that the amorphous silicon 53 is crystallized into polycrystalline silicon" (col. 4, lines 60-64).

Nakamura et al.'s XeCl excimer laser describes the makeup of its laser unit 59, but does not infer a film being melted under an XeCl mixed gaseous atmosphere. Rather, Nakamura et al. discloses that "Typical conditions for generating hydrogen plasma are a hydrogen flow rate of 20-200 sccm, a pressure of 0.1-1 Torr" (col. 4, lines 64-67).

Sato does not make up for these deficiencies. Instead, Sato discloses inclining of a single crystal layer with respect to a laser beam 10.

For at least these reasons, it is respectfully submitted that claims 1, 12, 20, 25, 30, 35, 40, 46 and 56 are patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed as well as for the additional features they recite. Applicants respectfully request that the rejections under 35 U.S.C. §103 be withdrawn.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2, 4-18, 20-23, 25-28, 30-33, 35-38, 40-43, 46-49 and 56-63 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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